N.Z.

Courtenay

"INTERNATIONAL"

DEALERS' SERVICE DATA

No. 6

MODEL 11.
DUAL WAVE
SEVEN VALVE.

FIRST EDITION, OCTOBER, 1935.
CIRCUITS D183 AND D183A

TURNBULL & JONES LTD.
Head Office : Wellington.

AUCKLAND, HAMILTON, PALMERSTON NORTH, CHRISTCHURCH, DUNEDIN.

ELECTRICAL SPECIFICATIONS.

Mains operated for	200-250 volts A.C. 50 cycles
Power consumption	75 watts
Undistorted output	3 watts
Valves used	1-80, 1-42, 1-75, 1-6A7, 3-6D6
Intermediate frequency	465 K.C.
Broadcast Band frequency	550-1500 K.C.
Short Wave Band coverage	5.5-15.5 M.C.
Line-up and test frequencies	465, 1400, 1000, 600 K.C., 15, 12, 9, 6 M.C.

GENERAL INSTRUCTIONS FOR LINING UP DUAL WAVE MODELS.

This method of line up presumes the possession of a ~~standard~~ signal generator covering all frequencies.

First, connect output from signal generator to grid of 6A7 mixer, and take care that ¼ M.F. condenser is between 6A7 grid and signal generator output, as otherwise bias would be short-circuited in this valve.

Set ~~standard~~ signal generator to 465 K.C. and align up I.F. transformers. These are aligned from top of chassis in the cans at back of chassis. Read microvolts absolute input as required to give standard 50 milliwatts output as shown on accompanying chart. Next, to line up the broadcast bands, set must be removed from cabinet. The broadcast and short wave trimmers are mounted underneath chassis both for convenience and efficiency in electrical layout and to avoid customers tampering with adjustments. The short wave trimmers are marked with RED SPOTS, AND SHOULD NOT BE TOUCHED EXCEPT IF ONE HAS STANDARD TEST OSCILLATOR OR CAN LISTEN TO SHORT WAVE STATIONS OF KNOWN FREQUENCY.

TO LINE UP BROADCAST BAND proceed as follows:—

(1) See that pointer is adjusted in a horizontal position when condensers are full in, that is, full capacity.

(2) Tune receiver dial to 1400 K.C. position. Adjust receiver oscillator and R.F. trimmers until 1400 K.C. signal from standard sig, gen. gives maximum output.

(3) Set receiver dial to 600 k.c. position. Adjust broadcast padder until 600 K.C. signal from generator gives maximum output. Check sensitivity with chart.

Important: Make no further adjustment on oscillator trimmer or padder condens

(4) Re-set receiver dial to 1400 K.C. position. Re-align R.F. trimmers only for maximum output of 1400 K.C. signal, and check sensitivity with chart. No further adjustment should be necessary for the broadcast band.

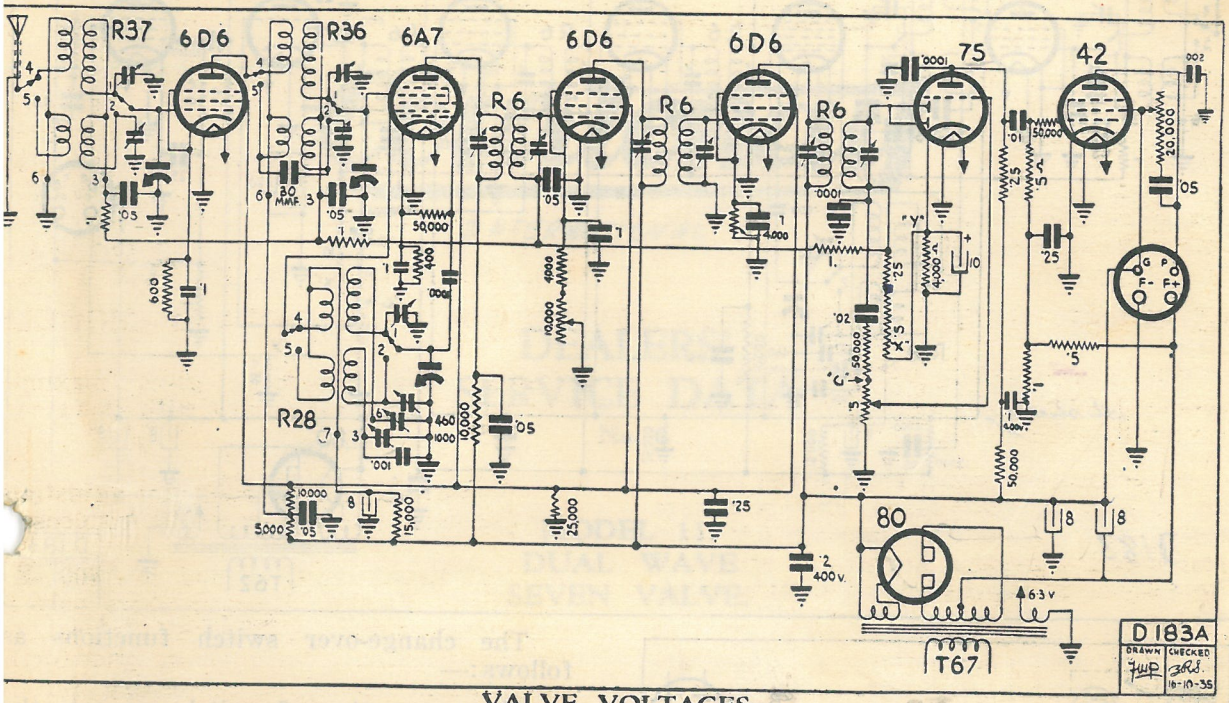
TO LINE UP SHORT WAVE BAND:

Switch to short wave band as shown by indicator on dial, but do not adjust pointer, as this would upset broadcast dial readings. Short wave trimmers are marked with red spots. Set dial pointer to bring in 12 M.C. signal. **The oscillator must be set at a higher frequency than the R.F. circuits.** To check this, tune to 11 070 M.C. and the weak image-repeat point should be heard. Note the condition that when the oscillator is set correctly at 465 K.C. (the I.F. frequency) higher than the R.F. signal received the image repeat will be 930 K.C. (i.e. 2 x I.F. frequency) lower than the received signal.

TO LINE UP SET WITHOUT STANDARD SIGNAL GENERATOR:

Line up of short wave band requires very delicate adjustment and had best be attempted only when calibrated oscillator is available. However, a clever serviceman can make a fairly acceptable line-up by using as a signal source stations whose frequencies are as near as possible to the suggested line-up frequencies mentioned above, and following the same procedure.

in this circuit the RF/IF tubes are self-biased
P.T.O for other circuit



VALVE VOLTAGES.

Valve.	Function.	Heater.	Plate.	Screen.	Grid.	Cathode.	Plate MA
80	Rectifier	5.2	(See note ‡)				
42	Output	6.3	205	225	−10*	0	30 MA
75	Det. & Aud.	6.3	100†		0	1.2**	
6D6	1st I.F. Amp.	6.3	225	80	A.V.C.	8	
6D6	2nd „ „	6.3	225	80	A.V.C.	8	
6A7	Mixer-Osc.	6.3	225	80	A.V.C.	4.	
6D6	R.F. Amp.	6.3	225	80	A.V.C.	4.	

does not apply this circuit overleaf

* Read on 100 volt scale, 1000 ohm/volt voltmeter. **Read on 10 volt scale.
† Read on 500 volt scale, 1000 ohm/volt voltmeter.
‡ High tension secondary measured from each 80 plate to can of insulated Elec. Cond., 80 removed: 300 volts A.C.
Total D.C. measured from 80 fil. to can of insulated Elec. Cond.: 330 V.D.C.
Filtered D.C. 80 fil. to earth 225 Volts D.C.

COIL RESISTANCES.

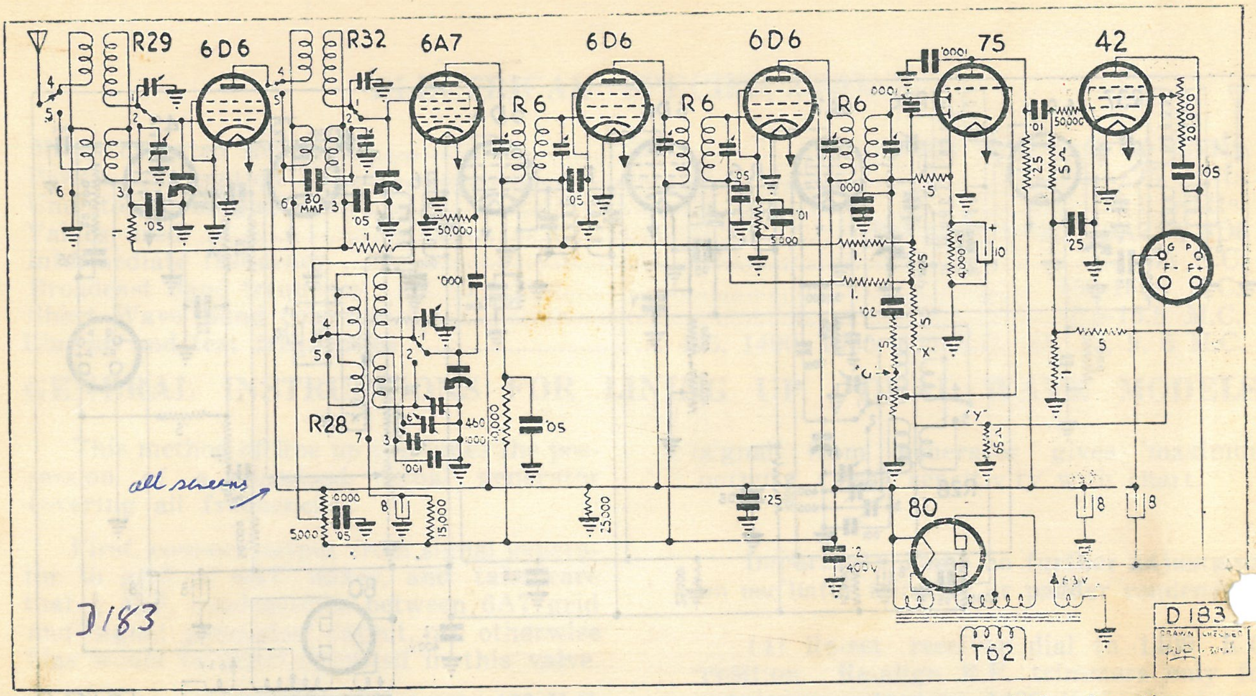
Coil:	Measured at:	Ohms.
Primary Power Trans.	Across power cord.	50
High Tension Secondary.	Each 80 plate to Center tap.	400-450
Speaker Field.	"Fil." Speaker socket.	1500
Speaker Input Trans.	"Grid to Plate" Speaker socket.	600
All I.F. Transformers.	(See circuit).	12
R.F. Coil Sec.	Nos. 1 to 3 of R36.	7
R.F. Coil Pri.	Nos. 4 to 6 of R36.	45
Ant. Coil Sec.	Nos. 1 to 3 of R37.	7
Ant. Coil Pri.	Nos. 4 to 6 of R37.	30
Oscillator Coil.	Nos. 1 to 6 of R28.	4
Oscillator Coil.	Nos. 4 to 7 of R28.	3

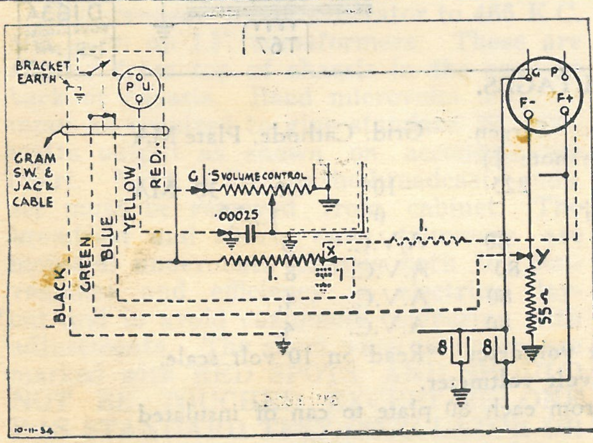
STAGE TO STAGE SENSITIVITY TO GIVE 18.7 VOLT OUTPUT.

465 K.C.	20,000	Micro-volts to grid of 1st I.F. amplifier.
465 K.C.	900	Micro-voltsto grid of 2nd I.F. amplifier.
465 K.C.	25	Micro-volts to grid of Converter.
1400 K.C.	1.	Micro-volts to set's antenna (through dummy antenna).
1000 K.C.	1	Micro-volts to set's antenna (through dummy antenna).
600 K.C.	1.	Micro-volts to set's antenna (through dummy antenna).

S/N 68976

In this circuit the RF/IF valve are back version and there is no sensitivity control





The above circuit illustrates method of connecting gramophone pick-up jacks and radio-gramophone switch to this Model. We find so few customers really desirous of gramophone connection that we prefer not to burden all sets with same, but to supply, at a nominal charge upon special request the additional feature of switching from radio to gramophone, and completely "killing" radio reception when switched to gramophone.

Parts required for connecting gram. are:—

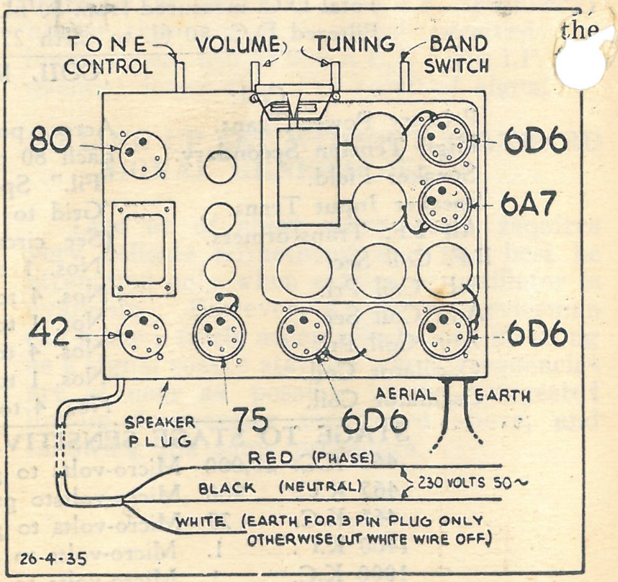
(1) Standard switch and pick-up jacks, with 5 wire cord attached.

(2) .1 MF. paper condenser.

(3) 1. Megohm resistor.

The change-over switch functions as follows:—

The top section of switch connects the pick-up jacks from earth to point G, which is the "hot" end of the volume control through the yellow and red wires. When gram. is connected the lower section of the switch is open and very high negative bias flows from the negative side of speaker field (F + of speaker socket) through the 1. meg. resistor to X, is filtered by the .1 MF. condenser, and through the 1 meg. resistor to the A.V.C. and bias circuits, cutting these valves off and causing set to be quiet for gramophone playing.



Printed by R.N.Z.

Note use of split-chassis

layout

N-Z Courtenay Radio

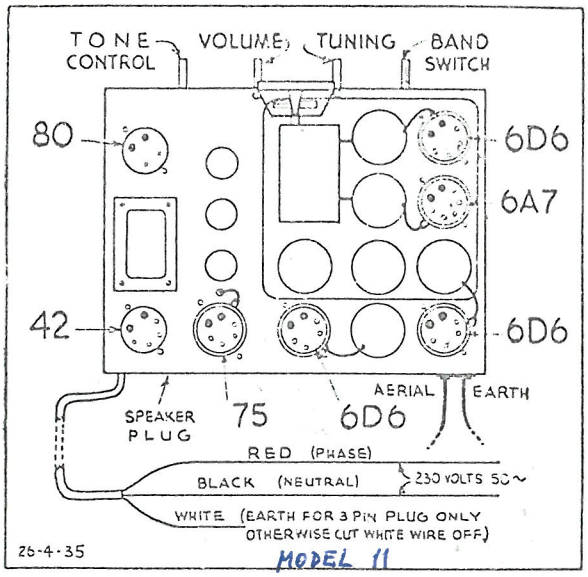
Service Supplements

DESCRIPTION OF 7 VALVE DUAL WAVE MODEL 11

Mains operated for	220-245 volts A. C. 50 cycles
Power consumption	65 watts
Undistorted power output	3 watts
Valves used	1 x 6A7, 3 x 6D6, 1 x 75, 1 x 42, 1 x 80
Intermediate frequency	465 k.c.
Broadcast Band frequency range	550-1500 k.c.
Short Wave Band frequency range	5.5-16 m.c

Sensitivity—
Broadcast Band—well under ½ microvolt per meter.
Shortwave Band—well under 1 microvolt per meter.

DYNAMIC SPEAKER——FULL 10in. HEAVY DUTY.



This model involves several unique and revolutionary features. The chassis is 13in. x 10in., of one piece pressed steel. The chassis itself is firmly fastened to cabinet by ¼in. bolts. Double rubber slinging is accomplished by mounting all delicate circuits such as tuning condenser, oscillator and R.F., coils and valves, upon a special rubber slung "super" chassis suspended slightly above the main chassis. The tuning condenser is separately rubber slung upon this rubber floating platform.

The main advantage of this form of design is adequate rubber slinging of tuning circuits without the necessity of mounting the complete chassis on rubber that would soon go "dead" if the whole weight of chassis was upon it. It also eliminates the floating action of control knobs as observed on some competitive models.

We wish to call your attention to the type of demonstration technique used by some salesmen. They assure the customer that such and such set is carefully rubber slung and demonstrate how dial or pointer moves when tuning knob is wiggled. That certainly proves rubber slinging, but that argument is not as important as stability of tuning on short wave. It would be impossible for the chassis with "floating knob" to be "wiggled" while tuning to short wave stations. We therefore contend that you can make an advantage point out of the rigid controls and independent floating "super" chassis built into this new model.

A concise demonstration of the superiority of our method would be to tune a competitive set to a short wave station and waggle the control knob, station would fade in and out. On our own set control knob is rigid and can only be used in a rotary motion to tune in stations.

While speaking of fading we wish to emphasise that many present-day receivers emphasise fading, or the distortion accompanying fading, unknown to the owner or dealer. This has been observed in Lab. measurements and only recently corrected. It has been found that fading of short wave signal received often causes the set's oscillator to shift its frequency slightly and further emphasise the fading. A special circuit avoids this to a remarkable degree in the new 7 valve model. Actual comparative "on the air" tests have proved that competitive sets of otherwise near equal performance would actually fade out and lose signal that was still held by the new 7 valve.

Sensitivity of this model has been improved to a remarkable extent on both bands, at the same time securing quiet set operation as regards set noise and background hiss. This is accomplished by operating an R.F. stage ahead of mixer valve and two intermediate stages all of which are operated slightly below their most sensitive point, which is their most noisy point of operation.